



**Monitoring report form for CDM programme of activities**  
**(Version 03.0)**

*Complete this form in accordance with the instructions attached at the end of this form.*

**MONITORING REPORT**

<b>Title of the PoA</b>	Impact Carbon Global Safe Water Programme of Activities (PoA)	
<b>UNFCCC reference number of the PoA</b>	9948	
<b>Version numbers of the PoA-DD applicable to this monitoring report</b>	7.0	
<b>Version number of this monitoring report</b>	3.0	
<b>Completion date of this monitoring report</b>	27/07/2019	
<b>Monitoring period number</b>	Second monitoring period	
<b>Duration of this monitoring period</b>	23/05/2017 – 22/05/2019 (both days inclusive)	
<b>Monitoring report number for this monitoring period</b>	1.0	
<b>Coordinating/managing entity</b>	Impact Carbon	
<b>Host Parties</b>	<b>Host Party of the PoA</b>	<b>Is this the host Party of a CPA covered in this monitoring report? (yes/no)</b>
	Rwanda	No
	Uganda	No
	Nigeria	Yes
	Kenya	No
<b>Applied methodologies and standardized baselines</b>	Methodology: AMS-III.AV. ver.4 Low greenhouse gas emitting safe drinking water production systems Standardized Baseline: N/A	
<b>Sectoral scopes</b>	3: Energy Demand	
<b>Amount of GHG emission reductions or net anthropogenic GHG removals achieved by all CPAs covered in this monitoring report in this monitoring period</b>	<b>Amount achieved before 1 January 2013</b>	<b>Amount achieved from 1 January 2013</b>
	0 tCO <sub>2</sub> e	1,011 tCO <sub>2</sub> e
<b>Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the CPA-DDs for the CPAs covered in this monitoring report</b>	153,860 tCO <sub>2</sub> e	

## PART I      Monitoring of programme of activities (PoA)

### SECTION A.    Description of PoA

#### A.1.    General description of PoA

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The purpose of the PoA is dissemination of low-carbon water purification technologies to households, communities, and institutions in Rwanda, Nigeria, Kenya and Uganda. Households throughout Rwanda, Uganda, Nigeria and Kenya lack access to reliably safe drinking water.

In Rwanda, only 36.8% of the population have access to piped water, with only 9.5% population having access to piped water within their homes<sup>1</sup>. Only 51.8% population uses an appropriate treatment method, with boiling being practiced by 47.0% population for water treatment<sup>2</sup>. 83.3% population uses wood or charcoal for cooking and boiling water<sup>3</sup>.

In Nigeria, only 9.6% of the population have access to piped water, with only 2.8% population having access to piped water within their homes<sup>4</sup>. Only 4.9% population uses an appropriate treatment method with boiling being practiced by 2.6% population for water treatment<sup>5</sup>. 66.9% population uses wood or charcoal for cooking and boiling water<sup>6</sup>.

In Kenya, only 43.6% of the population have access to piped water, with only 27.8% population having access to piped water within their homes<sup>7</sup>. Only 44.5% population uses an appropriate treatment method with boiling being practiced by 23.7% population for water treatment<sup>8</sup>. 73.3% population uses wood or charcoal for cooking and boiling water<sup>9</sup>.

In Uganda, only 22.1% of the population have access to piped water, with only 8.1% population having access to piped water within their homes<sup>10</sup>. Only 44.1% population uses an appropriate treatment method with boiling being practiced by 38.3% population for water treatment<sup>11</sup>. 94.8% population uses wood or charcoal for cooking and boiling water<sup>12</sup>.

Thus, the PoA by dissemination of low carbon, low cost water purification technologies aim to address the issue of lack of access to safe drinking water in target countries. In the absence of the project activity, the baseline scenario would be the use of non-renewable woody biomass / fossil fuels for boiling water to make it fit for drinking. The water purification systems (WPS), by replacing the use non-renewable biomass/ fossil fuel for water boiling, reduce equivalent amount of greenhouse gases (GHG) emissions.

Impact Carbon is the Coordinating/Managing Entity (CME) of the PoA.

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<sup>1</sup> Rwanda Demographic and Health survey Report, March 2016, table 2.5

<sup>2</sup> Rwanda Demographic and Health survey Report, March 2016, table 2.5

<sup>3</sup> Rwanda Demographic and Health survey Report, March 2016, table 2.8

<sup>4</sup> Nigeria Demographic and Health survey Report, June 2014, table 2.1

<sup>5</sup> Nigeria Demographic and Health survey Report, June 2014, table 2.1

<sup>6</sup> Nigeria Demographic and Health survey Report, June 2014, table 2.3

<sup>7</sup> Kenya Demographic and Health survey Report, June 2014, table 2.1

<sup>8</sup> Kenya Demographic and Health survey Report, June 2014, table 2.1

<sup>9</sup> Kenya Demographic and Health survey Report, June 2014, table 2.3

<sup>10</sup> Uganda Demographic and Health survey Report, January 2018, table 2.1

<sup>11</sup> Uganda Demographic and Health survey Report, January 2018, table 2.1

<sup>12</sup> Uganda Demographic and Health survey Report, January 2018, table 2.4

**A.1.1. Corresponding generic component project activities (CPAs)**

Title and reference number of the corresponding generic CPA	Version of the PoA-DD	Sectoral scopes	Applied methodologies and standardized baselines
CPA type 1: Small-scale technologies for household water consumption, with no project emissions	7.0	Sectoral scope 3: Energy demand	AMS-III.AV: "Low greenhouse gas emitting safe drinking water production systems" Version 4
CPA type 2: Technologies for Institutional water consumption, with no project emissions	7.0	Sectoral scope 3: Energy demand	AMS-III.AV: "Low greenhouse gas emitting safe drinking water production systems" Version 4
CPA type 3: Technologies for institutional water consumption, with project emissions	7.0	Sectoral scope 3: Energy demand	AMS-III.AV: "Low greenhouse gas emitting safe drinking water production systems" Version 4
CPA type 4: Technologies for community water consumption, with no project emissions	7.0	Sectoral scope 3: Energy demand	AMS-III.AV: "Low greenhouse gas emitting safe drinking water production systems" Version 4
CPA type 5: Technologies for community water consumption, with project emissions	7.0	Sectoral scope 3: Energy demand	AMS-III.AV: "Low greenhouse gas emitting safe drinking water production systems" Version 4

**A.1.2. CPAs included in the PoA**

Title and UNFCCC reference number of the CPA	Version of the PoA-DD	Title and reference number of the corresponding generic CPA	Crediting period type and duration	Covered in this monitoring report? (yes/no)
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 1, Version: 3.0, 9948-0001	3.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 30/05/2014 – 29/05/2021	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 2, Version: 3.0, 9948-0002	3.0	CPA type 3: Technologies for institutional water consumption, with project emissions	Renewable 30/05/2014 – 29/05/2021	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 3, Version: 1.3, 9948-0003	6.1	CPA type 3: Technologies for institutional water consumption, with project emissions	Renewable 23/05/2017 – 22/05/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 4, Version: 01.2, 9948-0004	7.0	CPA type 3: Technologies for institutional water consumption, with project emissions	Renewable 15/06/2017 – 14/06/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 5, Version: 5.0, 9948-0005	7.0	CPA type 2: Technologies for institutional water consumption, with no project	Renewable 04/10/2017 – 03/10/2024	No

		emissions		
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 6, Version: 5.0, 9948-0006	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 04/10/2017 – 03/10/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 7, Version: 5.0, 9948-0007	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 04/10/2017 – 03/10/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 8, Version: 5.0, 9948-0008	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 04/10/2017 – 03/10/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 9, Version: 5.0, 9948-0009	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 04/10/2017 – 03/10/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 10, Version: 5.0, 9948-0010	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 04/10/2017 – 03/10/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 11, Version: 5.0, 9948-0011	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 04/10/2017 – 03/10/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 12, Version: 5.0, 9948-0012	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 04/10/2017 – 03/10/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 13, Version: 5.0, 9948-0013	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 04/10/2017 – 03/10/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 14, Version: 1.0, 9948-0014	7.0	CPA type 3: Technologies for institutional water consumption, with project emissions	Renewable 15/12/2017 – 14/12/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 15, Version: 1.0, 9948-0015	7.0	CPA type 3: Technologies for institutional water consumption, with project emissions	Renewable 15/12/2017 – 14/12/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 16, Version: 5.0, 9948-0016	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 15/12/2017 – 14/12/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 17, Version: 5.0, 9948-0017	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 15/12/2017 – 14/12/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 18, Version: 5.0, 9948-0018	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 15/12/2017 – 14/12/2024	No

Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 19, Version: 5.0, 9948-0019	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 15/12/2017 – 14/12/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 20, Version: 5.0, 9948-0020	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 15/12/2017 – 14/12/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 21, Version: 5.0, 9948-0021	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 15/12/2017 – 14/12/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 22, Version: 5.0, 9948-0022	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 15/12/2017 – 14/12/2024	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 23, Version: 4.0, 9948-0023	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 24, Version: 4.0, 9948-0024	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 25, Version: 4.0, 9948-0025	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 26, Version: 4.0, 9948-0026	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 27, Version: 4.0, 9948-0027	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 28, Version: 4.0, 9948-0028	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 29, Version: 4.0, 9948-0029	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 30, Version: 4.0, 9948-0030	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 31, Version: 4.0, 9948-0031	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water	7.0	CPA type 2: Technologies for	Renewable	No

Programme of Activities (PoA): CPA 32, Version: 4.0, 9948-0032		institutional water consumption, with no project emissions	18/11/2018 – 17/11/2025	
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 33, Version: 4.0, 9948-0033	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 34, Version: 4.0, 9948-0034	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 35, Version: 4.0, 9948-0035	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 36, Version: 4.0, 9948-0036	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 37, Version: 4.0, 9948-0037	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 18/11/2018 – 17/11/2025	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 38 supported by Republic of Korea, Version: 2.0, 9948-0038	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 39 supported by Republic of Korea, Version: 2.0, 9948-0039	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 40 supported by Republic of Korea, Version: 2.0, 9948-0040	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 41 supported by Republic of Korea, Version: 2.0, 9948-0041	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 42 supported by Republic of Korea, Version: 2.0, 9948-0042	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 43 supported by Republic of Korea, Version: 1.0, 9948-0043	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 44 supported by Republic of Korea, Version: 1.0, 9948-0044	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA	7.0	CPA type 2: Technologies for institutional water	Renewable 26/04/2019 –	Yes

45 supported by Republic of Korea, Version: 1.0, 9948-0045		consumption, with no project emissions	25/04/2026	
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 46 supported by Republic of Korea, Version: 1.0, 9948-0046	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 47 supported by Republic of Korea, Version: 1.0, 9948-0047	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 48 supported by Republic of Korea, Version: 1.0, 9948-0048	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 49 supported by Republic of Korea, Version: 1.0, 9948-0049	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 50 supported by Republic of Korea, Version: 1.0, 9948-0050	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 51 supported by Republic of Korea, Version: 1.0, 9948-0051	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 52 supported by Republic of Korea, Version: 1.0, 9948-0052	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 53 supported by Republic of Korea, Version: 1.0, 9948-0053	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 54 supported by Republic of Korea, Version: 1.0, 9948-0054	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 55 supported by Republic of Korea, Version: 1.0, 9948-0055	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 56 supported by Republic of Korea, Version: 1.0, 9948-0056	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 57 supported by Republic of Korea, Version: 1.0, 9948-0057	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 58 supported by Republic of Korea,	7.0	CPA type 2: Technologies for institutional water consumption, with no project	Renewable 26/04/2019 – 25/04/2026	Yes

Version: 1.0, 9948-0058		emissions		
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 59 supported by Republic of Korea, Version: 1.0, 9948-0059	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 60 supported by Republic of Korea, Version: 1.0, 9948-0060	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 61 supported by Republic of Korea, Version: 1.0, 9948-0061	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 62 supported by Republic of Korea, Version: 1.0, 9948-0062	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 63 supported by Republic of Korea, Version: 1.0, 9948-0063	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 64 supported by Republic of Korea, Version: 1.0, 9948-0064	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 65 supported by Republic of Korea, Version: 1.0, 9948-0065	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 66 supported by Republic of Korea, Version: 1.0, 9948-0066	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 67 supported by Republic of Korea, Version: 1.0, 9948-0067	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 68 supported by Republic of Korea, Version: 1.0, 9948-0068	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 69 supported by Republic of Korea, Version: 1.0, 9948-0069	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 70 supported by Republic of Korea, Version: 1.0, 9948-0070	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 71 supported by Republic of Korea, Version: 1.0, 9948-0071	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes



Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 72 supported by Republic of Korea, Version: 1.0, 9948-0072	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 73 supported by Republic of Korea, Version: 1.0, 9948-0073	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 74 supported by Republic of Korea, Version: 1.0, 9948-0074	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 75 supported by Republic of Korea, Version: 1.0, 9948-0075	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 76 supported by Republic of Korea, Version: 1.0, 9948-0076	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 77 supported by Republic of Korea, Version: 1.0, 9948-0077	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	Yes
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 78 supported by Republic of Korea, Version: 1.0, 9948-0078	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 79 supported by Republic of Korea, Version: 1.0, 9948-0079	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 80 supported by Republic of Korea, Version: 1.0, 9948-0080	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 81 supported by Republic of Korea, Version: 1.0, 9948-0081	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 82 supported by Republic of Korea, Version: 1.0, 9948-0082	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 83 supported by Republic of Korea, Version: 1.0, 9948-0083	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 84 supported by Republic of Korea, Version: 1.0, 9948-0084	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water	7.0	CPA type 2: Technologies for	Renewable	No

Programme of Activities (PoA): CPA 85 supported by Republic of Korea, Version: 1.0, 9948-0085		institutional water consumption, with no project emissions	26/04/2019 – 25/04/2026	
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 86 supported by Republic of Korea, Version: 1.0, 9948-0086	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 87 supported by Republic of Korea, Version: 1.0, 9948-0087	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 88 supported by Republic of Korea, Version: 1.0, 9948-0088	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 89 supported by Republic of Korea, Version: 1.0, 9948-0089	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 90 supported by Republic of Korea, Version: 1.0, 9948-0090	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 91 supported by Republic of Korea, Version: 1.0, 9948-0091	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 92 supported by Republic of Korea, Version: 1.0, 9948-0092	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 93 supported by Republic of Korea, Version: 1.0, 9948-0093	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 94 supported by Republic of Korea, Version: 1.0, 9948-0094	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 95 supported by Republic of Korea, Version: 1.0, 9948-0095	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 96 supported by Republic of Korea, Version: 1.0, 9948-0096	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 97 supported by Republic of Korea, Version: 1.0, 9948-0097	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA	7.0	CPA type 2: Technologies for institutional water	Renewable 26/04/2019 –	No

98 supported by Republic of Korea, Version: 1.0, 9948-0098		consumption, with no project emissions	25/04/2026	
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 99 supported by Republic of Korea, Version: 1.0, 9948-0099	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 100 supported By Republic of Korea, Version: 1.0, 9948-0100	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 101 supported By Republic of Korea, Version: 1.0, 9948-0101	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No
Impact Carbon Global Safe Water Programme of Activities (PoA): CPA 102 supported By Republic of Korea, Version: 1.0, 9948-0102	7.0	CPA type 2: Technologies for institutional water consumption, with no project emissions	Renewable 26/04/2019 – 25/04/2026	No

## A.2. Coordinating/managing entity

>>

Impact Carbon

## SECTION B. Implementation of PoA

### B.1. Description of implemented PoA

>>

#### 1. Operational and Management Framework

Impact Carbon is the Coordinating and Managing Entity (CME) for the PoA. The Implementation of the PoA followed the following management system:

1. The CME / CPA implementer (CPAI) provided guidance / training / instructions to local sales and distribution partner (SDP) to collect requisite sales / installation data. The SDP sales staff compiled the list of units installed / distributed along with other required information and transferred the same to the electronic database management system at regular intervals managed by CME / CPAI.
2. The SDP operated and managed the electronic database with information on units installed / distributed under the CPAs, as received from the sales staff. The electronic database contains the following information for each installation / distribution<sup>13</sup>:
  - CPA Identifier
  - Location (Name and address of user, contract details, if available)
  - Unique serial number of the unit installed
  - Date of installation / distribution
  - Type of user (Household, Community, Institution etc.)
  - Technology types (UV, Chlorination etc.)
3. The CME / CPAI ensured that end users (schools) are aware of, and have agreed, that their unit (Ultra Flo / Ultra tab) is being subscribed to the PoA through informational material, trainings, social media and in contractual agreements.

<sup>13</sup> The thirty-five CPAs covered in this monitoring report are Generic CPA Type 2 CPAs implemented in Schools in Nigeria, thus the type of user is institution (Schools) and technology type is Chlorination (Ultra Flo / Ultra Tab).

4. The CME / CPAI ensured that there is no double counting of any unit in the electronic database by means of unique serial number (product ID) associated with each unit.
5. The CME / CPAI coordinated all ex-post monitoring activities in the PoA. The CME / CPAI:
  - Implemented the monitoring plan,
  - Determined the sample size as per sampling plan and identified the samples to be monitored (a single sampling plan has been applied to CPA 43 - 77 as detailed in section E.3 below)
  - Provided monitoring templates and training to the SDP for field monitoring
6. SDP recorded the following key parameters in a CPA Monitoring Record as per templates provided by CME /CPAI. Key monitored parameters were:
  - Operational Status of sampled WPS (in use / out of use)
  - Output Water Quality of sampled WPS units (Safe / unsafe)
  - Presence of safe public distribution network
7. The CME / CPAI, with support from external experts, checked and reviewed the monitoring data and calculated the emission reductions based on precision / reliability levels achieved for the monitored parameters.
8. The CME / CPAI, with support from external experts, calculated of emission reductions based on monitoring data collected and prepared the monitoring report.

## 2. Sampling Approach

A single sampling plan has been carried out for CPA 43 - 77. For more detail, refer section E.3 below.

### B.2. Post-registration changes to PoA

#### B.2.1. Corrections

>>  
N/A

#### B.2.2. Inclusion of monitoring plan

>>  
N/A

#### B.2.3. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

>>  
N/A

#### B.2.4. Changes to programme design

>>

Two changes to the programme design have been made to the registered PoA and approved prior to this monitoring period.

PRC request number	Approval Status	Date of Approval	Description
PRC-9948-002	Approved	03 Jul 17	Expansion of PoA Boundary to include Host Country Nigeria
PRC-9948-001	Approved	08 May 17	Expansion of PoA Boundary to include Host Country Kenya

**B.2.5. Changes specific to afforestation or reforestation activities**

&gt;&gt;

N/A

**PART II Monitoring of CPAs**

&gt;&gt;

This Monitoring report covers thirty-five CPAs in Nigeria (from CPA 43 to CPA 77), as listed in section A.1.2. These thirty-five CPAs are deemed homogeneous due to the following:

1. Have the same project boundary/country (i.e. Nigeria)
2. Follow generic CPA type 2, as listed in section A.1.1 above
3. Implement the same technology / measure (i.e. Chlorination).

Thus, these CPAs have been sub-grouped for monitoring purposes. The following sections of the monitoring report present information pertaining to these thirty-five CPAs only.

**SECTION C. Implementation of CPAs****C.1. Description of implemented CPAs**

&gt;&gt;


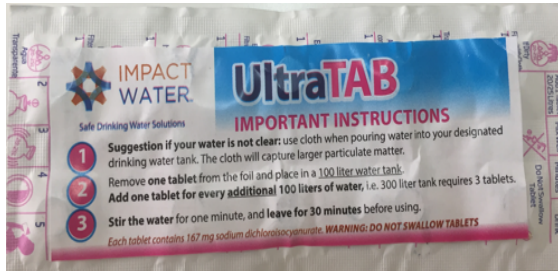
**a) Purpose of the specific-case CPA(s) and the measures taken for GHG emission reductions or net GHG removals by sinks –**

**Purpose:** The CPAs involve installation / distribution of Chlorination technology based WPSs (UltraFLO / UltraTAB) for use by institutions (schools) in Nigeria. The WPSs installed / distributed under the CPAs reduce dependency on the conventional water purification technique (i.e. boiling). Boiling water involves using non-renewable biomass (charcoal and fuelwood) based traditional cook stoves (unimproved) or fossil fuel (coal, kerosene) based stoves. Transition to the project WPSs reduces greenhouse gas emissions by avoidance of non-renewable / fossil fuel for boiling water in the baseline.

CERPD Co., Ltd. (CERPD) a company based in the Republic of Korea, is the CPAI for these CPAs. CERPD has provided all implementation costs for the CPAs. CERPD has fully sponsored the WPS to make WPS affordable to beneficiary schools, as well covered the cost of operation and management of the CPAs in a financially sustainable condition.

**b) Description of the technology employed and installed equipment and/or infrastructure**

The CPAs involve following two types of chlorination technology based WPS.

Description	UltraFlo	UltraTab
		
Size / Dimensions	Cartridge Length: ~12 cm Cartridge height: ~10 cm Cartridge circumference: ~22 cm	Strip size: ~13 cm X ~5.5 cm (10 tablets per strip)
Application	Piped water	Un-piped water
Flow rate	20L/min	1 tablet treats 100 L
Capacity/lifespan	340,000 L / 5-year expiry	10,000 L / 5-year expiry
Fixed or Portable	Fixed	Portable
Removal of E. Coli	99 (2-log)	99 (2-log)
Watts/Voltage	Not applicable	Not applicable

The distribution of units under the CPAs is as follows:

S.No.	CPA Reference No.	UltraFlo Systems	UltraTab Systems
1	9948-0043	5	3
2	9948-0044	5	3
3	9948-0045	6	3
4	9948-0046	5	3
5	9948-0047	5	3
6	9948-0048	5	3
7	9948-0049	6	3
8	9948-0050	6	3
9	9948-0051	6	3
10	9948-0052	5	2
11	9948-0053	5	2
12	9948-0054	5	2
13	9948-0055	5	2
14	9948-0056	5	2
15	9948-0057	5	2
16	9948-0058	5	2
17	9948-0059	6	2
18	9948-0060	6	2
19	9948-0061	7	2
20	9948-0062	5	2
21	9948-0063	5	2
22	9948-0064	5	2
23	9948-0065	5	2
24	9948-0066	5	2
25	9948-0067	5	2
26	9948-0068	5	2
27	9948-0069	5	2
28	9948-0070	5	2
29	9948-0071	7	2
30	9948-0072	25	2
31	9948-0073	6	2
32	9948-0074	6	2
33	9948-0075	6	2
34	9948-0076	6	2
35	9948-0077	6	2
Total		210	79

c) Relevant dates for the specific-case CPA(s) (e.g. construction, commissioning, continued operation periods, etc.);

S.No.	CPA Reference No.	Date of installation of first unit in the CPA	Crediting Period Start date
1	9948-0043	23-04-2019	26-04-2019
2	9948-0044	23-04-2019	26-04-2019
3	9948-0045	23-04-2019	26-04-2019
4	9948-0046	24-04-2019	26-04-2019
5	9948-0047	24-04-2019	26-04-2019
6	9948-0048	24-04-2019	26-04-2019
7	9948-0049	24-04-2019	26-04-2019
8	9948-0050	24-04-2019	26-04-2019
9	9948-0051	24-04-2019	26-04-2019

S.No.	CPA Reference No.	Date of installation of first unit in the CPA	Crediting Period Start date
10	9948-0052	24-04-2019	26-04-2019
11	9948-0053	24-04-2019	26-04-2019
12	9948-0054	24-04-2019	26-04-2019
13	9948-0055	24-04-2019	26-04-2019
14	9948-0056	24-04-2019	26-04-2019
15	9948-0057	24-04-2019	26-04-2019
16	9948-0058	24-04-2019	26-04-2019
17	9948-0059	24-04-2019	26-04-2019
18	9948-0060	24-04-2019	26-04-2019
19	9948-0061	24-04-2019	26-04-2019
20	9948-0062	24-04-2019	26-04-2019
21	9948-0063	24-04-2019	26-04-2019
22	9948-0064	24-04-2019	26-04-2019
23	9948-0065	24-04-2019	26-04-2019
24	9948-0066	24-04-2019	26-04-2019
25	9948-0067	24-04-2019	26-04-2019
26	9948-0068	24-04-2019	26-04-2019
27	9948-0069	24-04-2019	26-04-2019
28	9948-0070	24-04-2019	26-04-2019
29	9948-0071	24-04-2019	26-04-2019
30	9948-0072	25-04-2019	26-04-2019
31	9948-0073	25-04-2019	26-04-2019
32	9948-0074	25-04-2019	26-04-2019
33	9948-0075	25-04-2019	26-04-2019
34	9948-0076	25-04-2019	26-04-2019
35	9948-0077	25-04-2019	26-04-2019

**d) Total GHG emission reductions or net GHG removals by sinks achieved in this monitoring period for the specific-case CPA(s), including information on how double counting is avoided**

Each of the installed systems have a unique ID to avoid double counting. This ID is also mentioned in the Salesforce (the data management system in the PoA) along with the name, address, location and contact details of the school / institution where the system is installed. This ensures that each WPS unit can be uniquely identified and double counting is avoided.

Serial No.	CPA Reference No.	Emission Reductions tCO <sub>2</sub> e <sup>14</sup>
1	9948-0043	25
2	9948-0044	19
3	9948-0045	26
4	9948-0046	37
5	9948-0047	36
6	9948-0048	25
7	9948-0049	39
8	9948-0050	32
9	9948-0051	34
10	9948-0052	22
11	9948-0053	18

<sup>14</sup> No CERs are being claimed for the period 23/05/2017 to 25/04/2019, as the crediting period of CPAs covered in the monitoring report starts from 26/04/2019. All information / monitoring data specified in the monitoring report pertains to the period 26/04/2019 – 22/05/2019. Accordingly, the confidence / precision of 95/10, as applicable, has been applied for sub-grouped CPAs in line with registered PoA-DD / CPA-DDs.

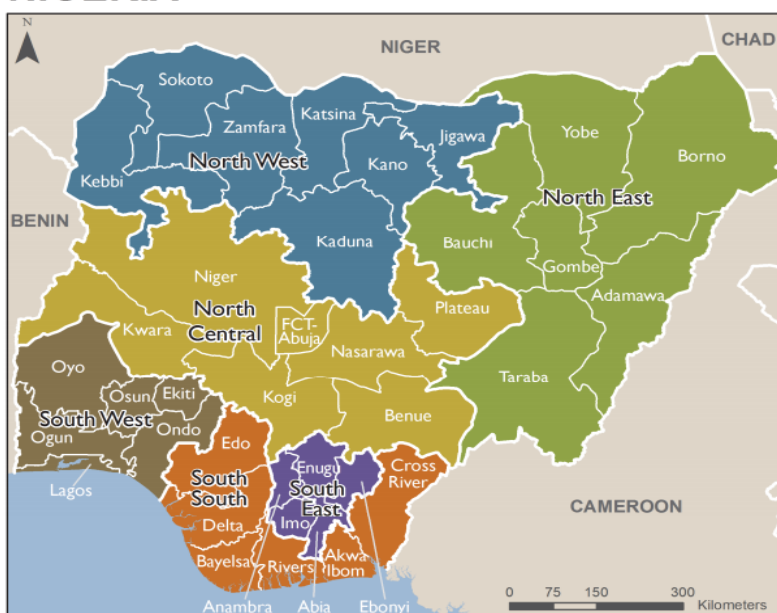
12	9948-0054	23
13	9948-0055	21
14	9948-0056	19
15	9948-0057	36
16	9948-0058	23
17	9948-0059	26
18	9948-0060	30
19	9948-0061	24
20	9948-0062	23
21	9948-0063	19
22	9948-0064	20
23	9948-0065	17
24	9948-0066	21
25	9948-0067	29
26	9948-0068	18
27	9948-0069	28
28	9948-0070	23
29	9948-0071	29
30	9948-0072	101
31	9948-0073	34
32	9948-0074	31
33	9948-0075	31
34	9948-0076	38
35	9948-0077	34
Total		1,011

## C.2. Location of CPAs

>>

The CPA covers the geographical boundary of Nigeria. Nigeria lies between 4°16' and 13°53' north latitude and between 2°40' and 14°41' east longitude and has a land area of 924,000 sq. km, one of the largest in Africa. The map of Nigeria, for reference purpose, is as follows:

### NIGERIA





**C.3. Post-registration changes to CPAs****C.3.1. Temporary deviations from the monitoring plans in the included CPA-DDs, applied methodologies, standardized baselines or other methodological regulatory documents**

>>  
N/A

**C.3.2. Corrections**

>>  
N/A

**C.3.3. Changes to the start date of the crediting period**

>>  
N/A

**C.3.4. Inclusion of monitoring plan**

>>  
N/A

**C.3.5. Permanent changes to the included monitoring plans, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents**

>>  
N/A

**C.3.6. Changes to project design**

>>  
N/A

**C.3.7. Changes specific to afforestation or reforestation CPA**

>>  
N/A

**SECTION D. Description of monitoring system of CPAs**

>>

The monitoring system under the CPAs involve following elements to ensure that the CME has unbiased, accurate and reliable monitoring information for the purposes of ex-post ER calculations.

**1.Total Sales Record:** The total sales record documents information of the WPS (UltraFLO / UltraTAB) implemented in the beneficiary school. The total sales record is kept electronically with supporting evidence in form of paper records and/or SMS tracking records. The Total Sales Record contains information related to WPS system, including the following, but not limited to:

- a) Type of system (UltraFLO / UltraTAB)
- b) Unique serial number of the units installed / distributed
- c) Date of installation / distribution
- d) Address and details of school and contact detail (if available) of representative
- e) Type of School (Boarding / Non-boarding)
- f) School population count (number of students / staff in boarding / non-boarding category)

**2.Other performance parameters:** The other monitoring parameters are determined via ex-post monitoring surveys on sampling basis or using published literature/data/national reports etc. as detailed in section E.2 and E.3 below.

## SECTION E. Data and parameters

### E.1. Data and parameters fixed ex ante

<b>Data/Parameter</b>	Case1 or Case 2
Data unit	-
Description	Case 1 or Case 2: Project activities implemented in rural or urban areas of countries with proportion of rural or urban population using an improved drinking-water source equal to or less than 60 % (Case1) or above 60% (Case2).
Source of data	Registered CPA-DD, page 12
Value(s) applied	Case 1
Choice of data or measurement methods and procedures	Established ex-ante in the registered CPA-DDs
Purpose of data	Calculation of baseline emissions
Additional comment	

<b>Data/Parameter</b>	WH
Data unit	Kj/L.°C
Description	Specific Heat of Water
Source of data	AMS-III.AV Version 4
Value(s) applied	4.186
Choice of data or measurement methods and procedures	Default Value from methodology
Purpose of data	Calculation of baseline emissions
Additional comment	-

<b>Data/Parameter</b>	T <sub>f</sub>
Data unit	°C
Description	Final Temperature
Source of data	AMS-III.AV Version 4
Value(s) applied	100
Choice of data or measurement methods and procedures	Default Value from methodology
Purpose of data	Calculation of baseline emissions
Additional comment	-

<b>Data/Parameter</b>	T <sub>i</sub>
Data unit	°C
Description	Initial Temperature
Source of data	AMS-III.AV Version 4
Value(s) applied	20
Choice of data or measurement methods and procedures	Default Value from methodology
Purpose of data	Calculation of baseline emissions
<b>Additional comment</b>	-

<b>Data/Parameter</b>	WHE
Data unit	Kj/L

Description	Latent Heat of Water Evaporation
Source of data	AMS-III.AV Version 4
Value(s) applied	2,260
Choice of data or measurement methods and procedures	Default Value from methodology
Purpose of data	Calculation of baseline emissions
Additional comment	-

<b>Data/Parameter</b>	L
Data unit	-
Description	Leakage
Source of data	AMS-I.E. Version 5
Value(s) applied	0.95
Choice of data or measurement methods and procedures	Default Value from methodology
Purpose of data	Calculation of leakage emissions
Additional comment	-

<b>Data/Parameter</b>	$R_{y,i}$
Data unit	Liters / person / day
Description	Average volume of drinking water per person per day
Source of data	WHO Minimum water quantity needed for domestic use in emergencies.
Value(s) applied	3.5 (for boarding schools, prisons) and 2 (for day schools). Refer ER calculator for details
Choice of data or measurement methods and procedures	Fixed ex-ante in the registered PoA-DD / CPA-DDs
Purpose of data	Calculation of baseline emissions
Additional comment	$N_{y,i}$ multiplied by $R_{y,i}$ shall not exceed the maximum output of the technology

## E.2. Data and parameters monitored

<b>Data/Parameter</b>	$QPW_y$
Data unit	Litres/yr
Description	Quantity of purified water in year y (litres)
Source of data	Calculated (Refer ER calculator)
Value(s) applied	3,976,509
Measurement methods and procedures	Calculated through Equation (1.a) For Case 1: $QPW_y = \sum (T_{y,i} \times N_{y,i} \times R_{y,i} \times 365 \times Water\ Quality_i \times Operational\ Units_i)$
Monitoring frequency	Annual or at least biennial
QA/QC procedures	-
Purpose of data	Calculation of baseline emissions
Additional comment	

<b>Data/Parameter</b>	$\eta_{wb}$
Data unit	Fraction
Description	Efficiency of water boiling system being replaced

Source of data	Default values as per AMS-III.AV for thermal efficiency of traditional three stone fire The Truth About Cooking Landscape Analysis, Nigeria, 2016 by GACC for % population using three stone fire
Value(s) applied	0.10
Measurement methods and procedures	Default value of 10% thermal efficiency for traditional stoves As per GACC report, all public institutions cook with wood on traditional three stone fire. Thus, $\eta_{wb} = 100\% \times 0.1$
Monitoring frequency	Continuously or at least biennial as per the monitoring requirements in the methodology.
QA/QC procedures	-
Purpose of data	Calculation of baseline emissions
Additional comment	-

<b>Data/Parameter</b>	$T_{y,i}$
Data unit	Number
Description	Total distributed water purification systems
Source of data	Project Sales database
Value(s) applied	210 UltraFLO 79 UltraTAB
Measurement methods and procedures	The total number of units by technology type and date deployed in each specific CPA is tracked in the in the Project Database.
Monitoring frequency	Continuous
QA/QC procedures	Project Sales Database is cross-checked with paper records to ensure transparent and robust data.
Purpose of data	Calculation of baseline emissions
Additional comment	In case of Ultra tabs, parameter $T_{y,i}$ is the number of institutions where UltraTABS are being supplied. Thus, each school receiving Ultra tab will be counted as one unit, for the purpose of determining $T_{y,i}$  Thus, number of institutions supplied with UltraTABS and total number of UltraTABS supplied to each of these institutions is monitored.

<b>Data/Parameter</b>	$N_{y,i}$
Data unit	Persons/equipment
Description	The average population serviced by water purification systems
Source of data	Project Sales database
Value(s) applied	307
Measurement methods and procedures	At the time of sale, the number of people using the unit is recorded in the sales receipt (PO / delivery note) .
Monitoring frequency	Continuously
QA/QC procedures	$N_{y,i}$ multiplied by $R_{y,i}$ shall not exceed the maximum output of the unit [per unit].
Purpose of data	Calculation of baseline emissions
Additional comment	-

<b>Data/Parameter</b>	Water Quality <sub>i</sub>
Data unit	Proportion
Description	Water quality measurement
Source of data	Sampling surveys
Value(s) applied	1.00

Measurement methods and procedures	Aquagenix testing kits were used to monitor E.Coli as the indicator organism to test the quality of water
Monitoring frequency	Annual or at least biennial
QA/QC procedures	Monitoring staff with prior experience of testing water quality was used
Purpose of data	Calculation of baseline emissions
Additional comment	-

<b>Data/Parameter</b>	Operational Units:
Data unit	Percentage
Description	Percent of the monitoring period in which the units are in use
Source of data	Sampling surveys
Value(s) applied	100%
Measurement methods and procedures	Surveys were conducted on sample of units for UltraFLO and UltraTAB to check their operational status
Monitoring frequency	At least once per verification or biennially
QA/QC procedures	Enumerators were trained to assess the use of system at the time of survey
Purpose of data	Calculation of baseline emissions
Additional comment	

<b>Data/Parameter</b>	$f_{NRB,y}$
Data unit	Fraction
Description	Fraction of woody biomass saved by the project activity in year, y, that can be established as non-renewable biomass using national or local statistics, survey results, studies, maps or other sources of information, such as remote-sensing data.
Source of data	Default value of $f_{NRB}$ from UNFCCC SSC WG 37th Meeting Report for Nigeria <sup>15</sup> The Truth About Cooking Landscape Analysis, Nigeria, 2016 by GACC for % population using non-renewable / fossil fuel.
Value(s) applied	0.93
Measurement methods and procedures	As per GACC report, all public institutions cook with wood on traditional three stone fire. Thus, $f_{NRB,y} = [\text{Default } f_{NRB} \text{ value}] * [\% \text{ of users using NRB}] + [1.0] * [\% \text{ of users using fossil fuels}]$ $= 0.93 * 100\% + 1.00 * 0\%$ $= 0.93$
Monitoring frequency	Continuously or at least biennial
QA/QC procedures	-
Purpose of data	Calculation of baseline emissions
Additional comment	-

<b>Data/Parameter</b>	$EF_{\text{projected\_fossilfuel}}$
Data unit	tCO <sub>2</sub> /TJ
Description	Emission factor as per AMS-I.E. procedures when NRB is displaced or the emission factor of the fossil fuel substituted
Source of data	AMS-I.E. as referenced by AMS-III.AV Version 4 for $EF_{f_{NRB}}$ and IPCC default values for fossil fuels The Truth About Cooking Landscape Analysis, Nigeria, 2016 by GACC for for % population using non-renewable / fossil fuel.
Value(s) applied	81.6

<sup>15</sup>[http://cdm.unfccc.int/Panels/ssc\\_wg/meetings/037/ssc\\_37\\_an14.pdf](http://cdm.unfccc.int/Panels/ssc_wg/meetings/037/ssc_37_an14.pdf)

Measurement methods and procedures	As per GACC report, all public institutions cook with wood on traditional three stone fire. Thus, $f_{NRB,y} = 100\% * 81.6$
Monitoring frequency	Continuously or at least biennial
QA/QC procedures	-
Purpose of data	Calculation of baseline emissions
Additional comment	-

<b>Data/Parameter</b>	Existence of public distribution network of safe drinking water
Data unit	Fraction
Description	Existence of public distribution network of safe drinking water in year y
Source of data	Survey Records
Value(s) applied	0
Measurement methods and procedures	Sampling Surveys were conducted to assess existence of safe drinking water public distribution network
Monitoring frequency	Annual or at least biennial
QA/QC procedures	-
Purpose of data	Calculation of baseline emissions
Additional comment	-

### E.3. Implementation of sampling plan

>>

A single sampling plan was carried out for CPA43 to CPA77 (covered in this monitoring report).

#### a) Description of implemented single sampling design

##### (i) Sampling Design

Due to the large number of WPS installed / distributed under these CPAs, it was not economically feasible to monitor each individual WPS unit distributed. Therefore, representative sampling-based monitoring approach was adopted as part of CPA-wide sampling plan (sub-grouping CPAs 43 to 77 as explained in section: Part II above). The sampling was therefore based on 95/10 confidence/precision levels:

##### (ii) Objectives and Reliability Requirements

The objective was to obtain an unbiased and reliable estimate of the proportion value of the following parameters over the course of the monitoring period, and with 95/10 confidence/precision for annual sampling across CPAs.

Sl. No.	Parameter	Description of parameter
1	Water Quality <sub>i</sub>	Water quality measurement of project WPS
2	Operational Units <sub>i</sub>	Monitoring to check the operational status of project WPS.
3	Existence of public distribution network of safe drinking water	Existence of public distribution network of safe drinking water in year y

##### (iii) Target Population

The target population for the parameters stated above are WPS Units installed / distributed in schools and recorded in the project sales database.

##### (iv) Sampling Frame:

The target population are WPS Units installed / distributed in schools and recorded in the project sales database (210 UltraFLO and 79 UltraTAB). The parameters for monitoring are homologous (i.e. implemented in schools), hence a common sampling was followed for all the parameters monitored.

## (v) Sampling Method

The required sample sizes were derived using equation (1), (2), (3), (4) and (9) of Appendix 3 of the Guideline: Sampling and surveys for CDM project activities and programmes of activities, Version 04.0 for proportion-based parameter as follows:

$$n \geq \frac{z^2 * N * V}{(N-1) * precision^2 + z^2 * V}$$

Where,

n = number of WPS to be sampled

N = Total number of WPS in the population

z = Constant referring to level of confidence (1.96 for 95 % confidence)

Precision = Required precision (e.g. 10% = 0.1)

$$V = \frac{SD^2}{p^2}$$

Where:

$$SD^2 = \frac{\sum_{i=1}^k g_i * p_i * (1 - p_i)}{N}$$

$$\bar{p} = \frac{\sum_{i=1}^k g_i * p_i}{N}$$

Where,

g<sub>i</sub> = weight of strata i in the population

p<sub>i</sub> = expected proportion of strata i in the population

k = total number of strata in the population

Stratified Random Sampling was applied by dividing the population into two strata (UltraFLO and UltraTAB). The expected parameter values (proportion) were determined based on project developer's knowledge and experience as per para 12(b) and 12(c) of the "Standard: Sampling and surveys for CDM project activities and programmes of activities"

The CPA sub-group population was arranged chronologically for each stratum. The WPS were selected by randomly assigning, in corresponding stratum, a number to each stove and sorting in increasing order from lower to higher number. Random numbers were generated using online random number generator for each stratum and the numbers obtained were used to identify the samples from the stratum population. A slightly higher number of samples were identified than that required to cover for outliers / non-response and ensure that the desired precision / confidence is achieved. The following tables demonstrate the same size determined:

Sample Size - Water Quality <sub>i</sub>			
WPS Type (Sampling)	Total Sales	expected water quality	Calculated Sample Size (n)
UltraFlo	210	0.95	22
UltraTab	79	0.95	9
Sample size determination			
Estimated Water Quality (p)			0.95
Estimated Standard Deviation of Water Quality (SD)			0.218
V = (SD/p) <sup>2</sup>			0.05
Sample Size required (Water Quality)			30

Sample Size - Operational Units			
Stove Model (Sampling Frame)	Total Sales (Sampling Frame Size)	expected operational proportion (SoF)	Calculated Sample Size (n)
Flo	210	0.95	22
Tabs	79	0.95	9
Sample size determination			
Estimated Operation Units (p)			0.95
Estimated Standard Deviation of Operational Units (SD)			0.218
$V = (SD/p)^2$			0.05
Sample Size required (Operational Units)			30
Sample Size - Safe water distribution network			
Stove Model (Sampling Frame)	Total Sales (Sampling Frame Size)	expected operational proportion (SoF)	Calculated Sample Size (n)
Flo	210	0.95	22
Tabs	79	0.95	9
Sample size determination			
Estimated SWDN (p)			0.95
Estimated Standard Deviation of SWDN (SD)			0.218
$V = (SD/p)^2$			0.05
Sample Size required (SWDN)			30

**b) Collected data (electronic spreadsheets may be attached and referenced)**

Data was collected by the Impact Water team. The team is well trained for the usage related surveys and water quality tests given prior experience of monitoring WPS devices. Surveyors visited the school premises, did visual inspections and interviewed school representatives to assess usage (operational status) and existence of safe drinking water public distribution network via a monitoring questionnaire. The Monitoring team also collected water samples for water quality testing using Aquagenix test kits. The monitoring (Surveys and Water Quality Tests) were conducted during May 2019.

**c) Analysis of the collected data**

Data obtained from the surveys / tests were used to estimate proportions values for the parameters described above. The values were then being factored into the emissions reduction calculations.

Sampling Constants	Values
Effective Monitoring period start date	26-04-2019
Monitoring period end date	22-05-2019
Monitoring frequency (years)	1
Level of sampling	PoA
Confidence (%) (90 or 95)	95%
Margin of Error (%)	10%
Z value	1.96

Sl. No.	Parameter	value	Reliability / precision
1	Water Quality <sub>i</sub>	1.00	achieved
2	Operational Units <sub>i</sub>	1.00	achieved
3	Existence of public distribution network of safe drinking water	0.00	achieved

**d) Demonstration of whether the required confidence/precision has been met**

The following tables demonstrate the status of precision/confidence for each of the monitored parameters



Sample Size - Water Quality <sub>i</sub>			
WPS Type (Sampling)	Total Sales	expected water quality	Calculated Sample Size (n)
UltraFlo	210	0.95	22
UltraTab	79	0.95	9
Sample size determination			
Estimated Water Quality (p)			0.95
Estimated Standard Deviation of Water Quality (SD)			0.218
$V = (SD/p)^2$			0.05
Sample Size required (Water Quality)			30
Monitoring Results			
WPS Type (Sampling)	Sampling frame	Monitored Sample Size	Monitored Usage (%)
UltraFlo	210	31	1.00
UltraTab	79	14	1.00
Reliability Check			
Samples Monitored			45
Monitored Water Quality (p)			100.00%
Standard Error of Water Quality			0.00%
Relative precision (Margin of error)			0.00%
Result			Ok, acceptable
Lower Bound confidence value			not applicable

Sample Size - Operational Units			
Stove Model (Sampling Frame)	Total Sales (Sampling Frame Size)	expected operational proportion (SoF)	Calculated Sample Size (n)
Flo	210	0.95	22
Tab	79	0.95	9
Sample size determination			
Estimated Operation Units (p)			0.95
Estimated Standard Deviation of Operational Units (SD)			0.218
$V = (SD/p)^2$			0.05
Sample Size required (Operational Units)			30
Monitoring Results			
WPS Type (Sampling Frame)	Sampling frame size	Monitored Sample Size	Monitored Usage (%)
UltraFlo	210	31	1.00
UltraTab	79	14	1.00
Reliability Check			
Samples Monitored			45
Monitored $W_Q$ (p)			100.00%
Standard Error of $U_y$			0.00%
Relative precision (Margin of error)			0.00%
Result			Ok, acceptable
Lower Bound confidence value			not applicable

Sample Size - Safe water distribution network			
Stove Model (Sampling Frame)	Total Sales (Sampling Frame Size)	expected operational proportion (SoF)	Calculated Sample Size (n)
Flo	210	0.95	22
Tab	79	0.95	9
Sample size determination			
Estimated SWDN (p)			0.95
Estimated Standard Deviation of SWDN (SD)			0.218
$V = (SD/p)^2$			0.05
Sample Size required (SWDN)			30
Monitoring Results			
WPS Type (Sampling Frame)	Sampling frame size	Monitored Sample Size	Monitored SWDN (%)
UltraFlo	210	31	0.00
UltraTab	79	14	0.00
Reliability Check			
Samples Monitored			45
Monitored SWDN (p)			0.00%
Standard Error of SWDN			0.00%
Relative precision (Margin of error)			#DIV/0!
Result			#DIV/0!
Lower Bound confidence value			#DIV/0!

**e) Demonstration of whether the samples were randomly selected and are representative of the population**

WPS were selected randomly from each stratum, after arranging them in chronological order by date of sale and assigning a serial number to each school. Random numbers were used to identify the samples to be monitored. This approach ensured that the entire population had an equal chance of being selected, and hence samples picked are representative of the population.

## SECTION F. Calculation of emission reductions or net anthropogenic removals

### F.1. Calculation of baseline emissions or baseline net removals

>>

Emission reductions are calculated as follows<sup>16</sup>:

**Step 1:** Calculate the quantity of purified water in year y (QPW<sub>y</sub>)

Equation (1.a)

QPW <sub>y</sub>	$QPW_y = \sum (T_{y,i} \times N_{y,i} \times R_{y,i} \times 365 \times \text{Water Quality}_i \times \text{Operational Units}_i)$ $= 8 \times 278 \times 2.0 \times 22^{17} \times 1.0 \times 1.0$ $= 97,856 \text{ L.}$
------------------	--

QPW<sub>y</sub>                      Quantity of purified water for drinking for all technologies type i in year y (Liters)

N<sub>y,i</sub>                        The average population serviced by water purification systems (person/equipment)

T<sub>y,i</sub>                        Average volume of drinking water per person per day (Liters/person/day)

R<sub>y,i</sub>                        Percent of units that meet water quality requirements

Operational Units<sub>i</sub>    Percent of the monitoring period in which the units are in use

**Step 2:** Calculate the specific energy consumption [SEC] required to boil one litre of water.

<sup>16</sup> The example calculation pertains to CPA 9948-0043 only. Please refer ER Calculator (tab 'ERs Summary') for calculation for each CPA.

<sup>17</sup> Instead of 365 days 22 days has been applied as the systems were deemed operational for 22 days in the monitoring period.

Equation (2)

SEC	$= [WH \times (T_f - T_i) + 0.01 \times WHE] / n_{wb}$ $= [4.186 \times (100 - 20) + 0.01 \times 2260] / 0.10$ $= 3574.80 \text{ kJ/L.}$
-----	--

Where

WH	Specific heat of water (kJ/L °C)
T <sub>f</sub>	Final temperature (°C)
T <sub>i</sub>	Initial temperature of water (°C)
WHE	Latent heat of water evaporation (kJ/L)
n <sub>wb</sub>	Efficiency of water boiling system being replaced (fraction)

**Step 3: Calculate baseline emissions.**Equation (1)

BE <sub>y</sub>	$= QPW_y \times SEC \times f_{NRB,y} \times EF_{projected\_fossilfuel} \times 10^{-9}$ $= 97,856 \times 3574.80 \times 0.93 \times 81.60 \times 10^{-9}$ $= 26.55 \text{ tCO}_2\text{e}$
-----------------	--

Where,

BE <sub>y</sub>	Baseline emissions during the year y in (tCO <sub>2</sub> e)
QPW <sub>y</sub>	Quantity of purified water in year y (Liters/yr).
SEC	Specific energy consumption required to boil one litre of water (kJ/L)
f <sub>NRB,y</sub>	Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable. For biomass, the default values of f <sub>NRB</sub> shall be used from EB67. A survey, national, or regional data is conducted to determine the mix of fuels (% of biomass, % of other fuels) used in the baseline. If a mixture of biomass and other fuels (e.g. fossil fuels) are used, a weighted average renewability factor shall be applied.
EF <sub>projected_fossilfuel</sub>	Emission factor when NRB is displaced or the emission factor of the fossil fuel substituted Default emission factors from AMS-I.E as referenced in AMS-III.AV version 4 and IPCC shall be used. A survey, national, or regional data is conducted to determine the mix of fuels (% of biomass, % of other fuels) used in the baseline. If a mixture of woody biomass and fossil fuels are used in the absence of the project activity a weighted average value shall be applied, as described in parameter box in section E.2

**F.2. Calculation of project emissions or actual net removals**

&gt;&gt;

PE<sub>y</sub> = 0, for type 2 CPAs**F.3. Calculation of leakage emissions**

&gt;&gt;

Leakage has been calculated using a default 95% leakage adjustment factor to baseline emissions.

L <sub>y</sub>	$= BE_y \times (1 - 0.95)$ $= 26.55 \times (1 - 0.95)$ $= 1.33 \text{ tCO}_2\text{e}$
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L <sub>y</sub>	Leakage emission during the year y in (tCO <sub>2</sub> e)
BE <sub>y</sub>	Baseline emissions during the year y in (tCO <sub>2</sub> e)

F.4. Calculation of emission reductions or net anthropogenic removals<sup>18</sup>

CPA UNFCCC reference number	Baseline GHG emissions or baseline net GHG removals (t CO <sub>2</sub> e)	Project GHG emissions or actual net GHG removals (t CO <sub>2</sub> e)	Leakage GHG emissions (t CO <sub>2</sub> e)	GHG emission reductions or net anthropogenic GHG removals (t CO <sub>2</sub> e)		
				Before 01/01/2013	From 01/01/2013	Total amount
9948-0043	26.55	0	1.33	0	25	25
9948-0044	20.15	0	1.01	0	19	19
9948-0045	27.81	0	1.39	0	26	26
9948-0046	39.16	0	1.96	0	37	37
9948-0047	38.48	0	1.92	0	36	36
9948-0048	27.13	0	1.36	0	25	25
9948-0049	41.97	0	2.10	0	39	39
9948-0050	33.73	0	1.69	0	32	32
9948-0051	35.86	0	1.79	0	34	34
9948-0052	23.65	0	1.18	0	22	22
9948-0053	18.97	0	0.95	0	18	18
9948-0054	25.07	0	1.25	0	23	23
9948-0055	22.48	0	1.12	0	21	21
9948-0056	20.14	0	1.01	0	19	19
9948-0057	38.77	0	1.94	0	36	36
9948-0058	24.24	0	1.21	0	23	23
9948-0059	28.27	0	1.41	0	26	26
9948-0060	32.28	0	1.61	0	30	30
9948-0061	25.42	0	1.27	0	24	24
9948-0062	24.40	0	1.22	0	23	23
9948-0063	20.30	0	1.02	0	19	19
9948-0064	21.93	0	1.10	0	20	20
9948-0065	18.11	0	0.91	0	17	17
9948-0066	22.73	0	1.14	0	21	21
9948-0067	30.95	0	1.55	0	29	29
9948-0068	19.22	0	0.96	0	18	18
9948-0069	29.58	0	1.48	0	28	28
9948-0070	24.57	0	1.23	0	23	23
9948-0071	31.18	0	1.56	0	29	29
9948-0072	106.68	0	5.33	0	101	101
9948-0073	35.91	0	1.80	0	34	34
9948-0074	33.20	0	1.66	0	31	31
9948-0075	33.52	0	1.68	0	31	31

<sup>18</sup> BE<sub>y</sub> - L<sub>y</sub> is not equal to ER<sub>y</sub> as ER<sub>y</sub> has been rounded down as a conservative measure.

9948-0076	40.10	0	2.00	0	38	38
9948-0077	36.29	0	1.81	0	34	34
<b>Total</b>	1,078.76	0	53.94	0	1,011	1,011

**F.5. Comparison of emission reductions or net anthropogenic removals achieved with estimates in the included CPA-DDs**

CPA UNFCCC reference number	Amount achieved during this monitoring period (t CO <sub>2</sub> e)	Amount estimated ex ante for this monitoring period in the CPA-DD (t CO <sub>2</sub> e)
9948-0043	25	4,396
9948-0044	19	4,396
9948-0045	26	4,396
9948-0046	37	4,396
9948-0047	36	4,396
9948-0048	25	4,396
9948-0049	39	4,396
9948-0050	32	4,396
9948-0051	34	4,396
9948-0052	22	4,396
9948-0053	18	4,396
9948-0054	23	4,396
9948-0055	21	4,396
9948-0056	19	4,396
9948-0057	36	4,396
9948-0058	23	4,396
9948-0059	26	4,396
9948-0060	30	4,396
9948-0061	24	4,396
9948-0062	23	4,396
9948-0063	19	4,396
9948-0064	20	4,396
9948-0065	17	4,396
9948-0066	21	4,396
9948-0067	29	4,396
9948-0068	18	4,396
9948-0069	28	4,396
9948-0070	23	4,396
9948-0071	29	4,396
9948-0072	101	4,396
9948-0073	34	4,396
9948-0074	31	4,396
9948-0075	31	4,396
9948-0076	38	4,396
9948-0077	34	4,396
<b>Total</b>	1,011	153,860

**F.5.1. Explanation of calculation of “amount estimated ex ante for this monitoring period in the CPA-DD”**

&gt;&gt;

The ex-ante estimate for the monitoring period has been calculated as follows:

$$= \text{Ex-ante ER as per CPA-DD (Section B.4.4)} * \text{effective duration of monitoring period}^{19} / 365$$

$$= 59,433 * 27 / 365 = 4396$$

**F.6. Remarks on increase in achieved emission reductions**

&gt;&gt;

N/A

**F.7. Remarks on scale of small-scale CPAs**

&gt;&gt;

The emission reductions are lower than the ex-ante estimates substantiating that the CPAs are below the limit of type III category (60,000, per annum equivalent to 4,396 tCO<sub>2</sub>e for the monitoring period).

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**Document information**

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.0	31 May 2019	Revision to: <ul style="list-style-type: none"> <li>• Ensure consistency with version 02.0 of the “CDM project standard for programmes of activities” (CDM-EB93-A07-STAN);</li> <li>• Add a section on remarks on the observance of the scale limit of small-scale CPAs during the crediting periods;</li> <li>• Add "changes specific to afforestation or reforestation activities/CPA" as a possible post-registration changes;</li> <li>• Clarify the reporting of net anthropogenic GHG removals for A/R PoAs between two commitment periods;</li> <li>• Make structural and editorial improvements.</li> </ul>
02.0	7 June 2017	Revision to: <ul style="list-style-type: none"> <li>• Ensure consistency with version 01.0 of the “CDM project standard for programmes of activities” (CDM-EB93-A07-STAN);</li> <li>• Make editorial improvements.</li> </ul>
01.0	1 April 2015	Initial publication.

<sup>19</sup> The effective duration of monitoring period is deemed as 27 days as per following:

Crediting period start date of all CPAs considered in this monitoring report = 26 April 2019

Monitoring period start date = 23 May 2017

End date of monitoring period = 22 May 2019

27 days = 22 May 2019 – {Max (26 April 2019, 23 May 2017)} +1

<i>Version</i>	<i>Date</i>	<i>Description</i>
Decision Class: Regulatory		
Document Type: Form		
Business Function: Issuance		
Keywords: monitoring report, programme of activities		